CALCIUM SULFONATE RUST PENETRATING SEALER FOR STEEL MSP-00-06A

1.0 Description. This specification covers calcium sulfonate rust penetrating sealer for steel. The sealer, after allowing a minimum drying time, may be recoated with an approved primer or topcoat. It is suitable for any steel structure that has developed pack rusting in overlapping steel plates, joints or at bolted areas. It is intended for application by brush, aerosol spray, and conventional or airless spray. This coating is to be used on in-place structures as part of a long-term maintenance program, and as such should be applied in accordance with SSPC-PA1 "Shop, Field and Maintenance Painting".

2.0 Composition. The primary resin used to manufacture the calcium sulfonate rust penetrating sealer shall be a modified overbased crystalline calcium sulfonate that creates a highly polar complex capable of protecting the underlying steel from corrosion. In addition to the calcium sulfonate complex, the paint shall also contain film forming oleoresinous compounds that act to reduce tack in the dry film.

3.0 Properties. The mixed coating properties shall be as follows:

Item	**Requirement**
Color	red iron oxide
Modified Crystalline Overbased Calcium Sulfonate, per cent by weight, min.	15
Coarse Particles and Skins as retained on No. 325 (45µm) mesh sieve, percent, max.	1.0
Viscosity, #4 Ford Cup, Seconds	50 - 70
Volatile Organic Content (VOC), lbs/gal.(g/L), max.	3.5 (420)
Drying Time, hours to recoat	2 - 6
Flash Point, F (C), max	104 (40)
Salt Fog Resistance, 500 hours (Coating applied at 1-2 mils (25-50 µm) dry film over SSPC-SP5 cold rolled steel))	No more than 1% rust under-cutting, blistering or peeling.

3.1 Pigment Settlement. The paint shall show perfect suspension (10 rating) when tested as specified in ASTM D 869, when stored for six months.

3.2 Working Properties. The paint shall be uniform and easily spray-applied when tested in accordance with Federal Standard No.141, Method 4331. The primer and topcoat shall show no streaking, running or sagging after drying.

3.3 Storage. The paint shall show no thickening, curdling, gelling, or hard caking when tested as specified in Federal Standard No.141, Method 3011 after storage for six months from date of delivery in tightly covered containers at a temperature of not less than 50 F or more than 110 F (less than 10 C or more than 43 C).

4.0 Test Methods. The test methods used to verify compliance with the properties specified shall be as follows:

American Standards for Testing and Materials (ASTM)	
B117	Salt Spray (Fog) Testing
D1200	Viscosity of Paints, Varnishes and Lacquers by Ford Viscosity Cup
D1210	Fineness of Dispersion of Pigment-Vehicle Systems
D3278	Flash Point of Liquids by Seta Flash Closed Tester
D3960	Volatile Organic Content (VOC) of Paints

Federal Test Method Standard No. 141	
Method 4061	Drying Time

5.0 Marking. All containers shall be legibly marked with the following information:

Name:
Specification:
Color:
Lot Number:
Date of Manufacture:
Quantity of Paint in Container:
Information and Warnings as may be required by Federal and State Laws.
Manufacturer's Name and Address:

6.0 Application.

6. 1 This low viscosity, penetrating coating is intended for use as a penetrating "pre-primer" for jointed or bolted areas of steel structures which suffer from pack-out rusting. All loose rust, rust scale, and old non-adherent paint shall be removed from the joint seam areas to be treated in accordance with SSPC-SP2. Obvious deposits of oil, grease, or road salt shall be removed in accordance with SSPC-SP1 Solvent Cleaning.

6.2 The air and surface temperature shall be over 50 F (10 C) and the weather conditions shall be such that the coated areas shall not be subjected to rain or water contact for a twenty four hour period after application. Allow at least twenty-four hours cure time in good weather before recoating. The joint area may seem tacky or oily after an overnight cure period, but in many cases may be top coated in this condition. (Always confirm intercoat adhesion when recoating a sealed joint area).

6.3 Mix the coating thoroughly by hand to insure homogeneity. Screen coating before applying, as solid particulates will inhibit the penetrating effects of the coating. Do not thin. Apply by spray, aerosol can or brush. If the coating runs or sags, smooth out runs with a brush. Excess coating and moisture will exit from the lower edge of the joint. Because of the porous nature of the rust layer and the inaccessibility of the area inside the joint, wet film thickness measurements will not be taken.

6.4 Deposit enough coating to thoroughly wet the joint seams. Coat the upper edge of all seams first, working down the sides of the joint from top to bottom, and thoroughly wetting the seam with coating in a manner as to propel the material into the joint. Moisture will be displaced from the joint and should be allowed to exit freely from the bottom of the jointed area. (Note: Joint geometries vary widely. It is not the intent of this specification to address application to each joint type. The applicator must evaluate individual joint geometries to determine the application method that will result in optimal joint penetration coverage).

6.5 The spreading rate on non-porous surfaces for a 1.0 mil (25 μm) dry film thickness is 705 square feet per US gallon (17 m^2/L). Actual spreading rates will be significantly lower due to the porous nature of the rusted substrate.

7.0 Manufacturer and Brand Name Approval. Prior to approval and use of the calcium sulfonate penetrating sealer, the manufacturer shall submit to Project Operations a one-gallon (4 L) sample of the proposed material. The manufacturer shall also submit a certified test report from an approved independent laboratory showing specific test results for salt spray resistance of steel panels prepared and tested as specified in Sec 3.0.

7.1 Final Acceptance. Final acceptance of calcium sulfonate penetrating sealer will be based on a manufacturer's certification submitted by the contractor to the engineer and upon results of tests made on samples of the material. Each lot will be sampled and tested prior to approval and use.

7.1.1 Samples of any or all ingredients used in the manufacture of this paint may be requested by the purchaser and shall be supplied upon request, along with the supplier's name and identification for the material.